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ABSTRACT

The development of course materials at the Open Learning Institute, British Columbia, Canada, is examined from two perspectives: as an industrial process and as a social process. The public institute provides distance education through paced home-study courses. The course team model used at the Institute is a system approach. Course development occurs in a clearly defined sequence of steps within the context of a course team composed of a course writer, consultant, course designer, visual designer, program coordinator, and copyright officer. The criteria used to describe the industrial process of course development are: division of labor, mechanization and automation, application of organizational principles, mass production, and quality control. The course development process is also conceptualized as a social process, based on the following criteria: hierarchy and power, personality, fear and resentment, novelty, workloads, and frustration. Ways in which the independent but related social and industrial processes can be integrated into an overall framework for effective and efficient course development are suggested. Appendices include: a bibliography; data on enrollments, student characteristics, courses, programs, student support series, and staff; components of the course package; a list of the main function of course team members; and a diagram of the course development process. (Author/SW)

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SYMPOSIUM

DISTANCE EDUCATION: INDUSTRIAL OR SOCIAL PROCESS

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Course Development: Industrial or Social Process

by

David Kaufman

Open Learning Institute

Paper presented at the Annual Meeting of the
American Educational Research Association

New York City

March 1982

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Background of the Open Learning Institute

The Open Learning Institute (OLI) is a Canadian public distance education institution established by the British Columbia Provincial Government in June 1978. The Institute has a broad and challenging mandate to perform the following functions:

(1) (a) provide programs of study leading to a first degree in Arts and Science;
(b) provide programs of study in career, technical and vocational areas and;
(c) provide programs of study in adult basic education.

(2) The Institute shall manage needed support services, develop and acquire courses, programs of study and learning materials and distribute them by distance education methods.

Many definitions have been given for the term "Distance Education". In this paper, the term is used to mean an educational process in which a significant proportion of the teaching is conducted by someone removed in space and/or time from the learner. The purpose of the Institute is to provide these services to, amongst others, geographically or socially isolated adults across the Province of British Columbia.

Current status of the Institute

Table 1 provides a summary of the status of the Open Learning Institute as of January 1981. It is clear from these data that the Institute has grown very rapidly since its inception.

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Insert Table 1 about here

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Details regarding the establishment of OLI and the decisions which have led to its current status have been described earlier. Interested readers are referred to the papers by Kaufman and Bottomley (1981) and Mugridge (1981).

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Components of an OLI Course Package

OLI courses are paced home-study courses. Students are mailed packages that contain all of the necessary materials for a particular course. An OLI course package consists of a number of components, as shown in figure 1. Some components are produced at the Open Learning Institute and others are purchased. It is unlikely that all the components listed would be part of a particular course package.

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Insert figure 1 about here

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The majority of courses developed at the Open Learning Institute are based on a particular textbook. The learning units provide the needed support to students for working through the textbook. A number of OLI courses are "stand-alone" courses. That is, they are self-contained courses in which the learning units serve as the textbook in addition to the other functions outlined in figure 1. For example, one OLI electricity course contains about 400 pages and 175 visuals. Since the development of a stand-alone course is a major undertaking, every attempt is made to identify suitable published material.

Course team approach

Course development at OLI is based on a course team approach. Each member of the team performs a particular function, but often contributes ideas and expertise in several areas. This leads to carefully designed, developed and produced course materials which have benefited through contributions by several individuals. The course team members and their functions are given in Table 2.

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Insert Table 2 about here

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A coursewriter is engaged by contract to prepare a course outline. A consultant is commissioned to evaluate the outline. Once approval is given, the writer prepares the complete course and prescribes all other necessary materials such as textbooks, audio cassettes, laboratory kits, etc. All these materials must be approved by the consultant.

Coursewriters and consultants are drawn from experts in the field: universities, colleges, institutes, school districts, business and industry, government.

The course designer is responsible for editing the material. He attends to matters of style and the other details of editing. He also ensures that the material unfolds logically, that it obeys the principles of sound learning, that the language used is directly accessible to a student studying largely on his own, and that the material is supported by appropriate exercises, assignments and other reinforcements to learning. The course designer is assisted in his work by the visual designer, copyright officer, and - in some cases - by audio producers and scriptwriters.

The program coordinator or director ensures internal acceptability and transferability outside of OLI.

Course Development Process

After the blueprint has been approved, a schedule is established for the preparation of course units. These "units" contain specified amounts of course content and usually require from one to three weeks of student time, assuming that learners are expected to spend roughly six to ten hours per week on the course. They include the practice exercises and assignments that students are expected to work through.

The coursewriter normally prepares one unit at a time. Each unit is reviewed intensively and modifications are suggested by the program coordinator, course consultant and course designer. The visual designer then generates illustrations and the audio specialist works on the script.

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Copyright clearances for both print and visual material are also applied for at this point.

Illustrations play an important role in the courses. For example, in the first 57 courses developed, 3,400 illustrations and 320 photographs were prepared by the graphics department. In addition, 500 copyrighted illustrations were used. The graphics department is responsible both for the design and production of visual materials.

Audio cassettes are used in courses when they can enhance the student's learning. In language instruction in French, for example, cassettes are used almost exclusively. Play and poetry readings supplement studies in literature. Case studies in business illustrate the principles developed in the course manual. Tutors occasionally record their comments to students on cassettes. Scripts are usually developed by commissioning writers to undertake the task.

Whenever possible, the course materials are worked through in detail by one or two "pilot" students. In going through the course, the students make their judgements using the criteria of clarity, consistency, interest, instructional quality, content coverage and workload. Comments from the various courses are normally channeled to the coursewriter through the course designer in meetings as well as in written reports.

The process of examination and revision continues until the final course unit meets an acceptable standard of quality. This process is not always smooth and straightforward. The preparation of home-study materials makes demands on members of the course team that sometimes cause stresses and strains. As Lewis (1971) described most forcefully:

> All are expected, in fact, to learn something of educational technology. For example, the writing of correspondence units is not just a matter of converting ordinary lectures into print. In the ordinary lecturing situation, it is usually possible for students to question the lecturer on points of difficulty. In the case of correspondence materials, this

> safeguard is missing. Since the authors of correspondence units will never be physically present for questioning, extra care must be taken to ensure that each unit is a sound piece of exposition. The main teaching points must be fully explained. Misleading statements and irrelevant scholastic displays must be eliminated. There must be no mistakes, non-sequiturs, gaps or other defects in the argument. All written materials need in fact to be well-structured and self-explanatory and pitched at the right level of difficulty. Even this may not be enough. Unfortunately, it is all too easy to be clear and accurate and, at the same time, intolerably dull. It is also possible to be clear and accurate with respect to subjects that most students regard as being irrelevant and unimportant. Some effort must therefore be made to arouse in the student a sense of excitement and purpose. In the very act of imparting knowledge, the instructional materials must explain why the knowledge is worth having and how it fits into the broader scheme of things. Ideally, all the University's teaching materials should be clear and exciting and to the point. To use a popular idiom, they should turn the student on. They should generate in the average student a sense of direction, and a feeling that what he is learning is relevant and worthwhile. Unless these conditions can be met, learning at a distance will tend to become a burden rather than a pleasure. It need hardly be said that very few people can write as well as this. Just a few writers seem to have the gift of writing in a way that is both intelligible and exciting. Their materials have personality. They are well-structured and self-sufficient and they are subtly enriched in a variety of ways. However, there are no clear-cut prescriptions for designing such materials. And many academics are not even convinced that it is necessary to go to so much trouble.

Following completion of the units, the final examination, Course Manual for students and Tutor Manual are completed. Each course unit passes through the production process, which involves word processing, typesetting, proofreading and paste-up. All members of the OLI team have the opportunity to make minor changes or corrections before the printing stage. Figure 1 illustrates the complete process in a simplified form.

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Course Development as an Industrial Process

Keegan (1980) has attempted to define 'distance education'. He points to Peter's early writings (1971), in which he laid the ground for his theory of distance education.

> Correspondence instruction is the most industrialized form of instruction and the usual theoretical criteria for the description of traditional instruction do not help very much in analyzing correspondence instruction. (This) has suggested the introduction of new categories taken from those sciences investigating the industrial production process. It is, in fact, astounding to see how much better these criteria help to understand and describe the institutional process in correspondence instruction. Some of the suggested criteria are: division of labour (on the side of the teachers); mechanization, automation, application of organizational principles, scientific control, objectivity of teaching behaviour, mass production, concentration and centralization. (p.225)

Although the industrial process does not exist apart from the people that create it and use it, it does operate according to a set of laws that differ from those of a social process. When we talk of a social process, we are referring to the people and the relationships between them; when we refer to an industrial process, we mean the tools, techniques and methods of doing the prescribed tasks. Since each process operates according to its own kind of laws, each may be treated independently of the other.

In examining the course development process from this viewpoint, it is clear that some of Peter's criteria do apply as well as others which describe an industrial process. The following criteria apply to the course development process.

division of labour: Individuals operate within prescribed boundaries that are dictated by technical requirements and division of labour work principles. Job descriptions are specified for in-house staff members and detailed contracts are signed by external staff such as coursewriters and consultants.

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mechanization and automation: Use of modern technological tools such as computerized word-processing and typesetting equipment dictate, to a large extent, the process used by the course team. The requirement of large-scale inexpensive print runs also affects the design and process used by course team members.

application of organizational principles: A hierarchical structure exists which is explicit and communicated. Various formal approval stages exist in the course development process in which the highest person in the hierarchy who is responsible for the delivery of the course is involved. A workflow plan has been developed and enforced (called the Systems Model, Kaufman 1981) which defines the steps involved in the process. Performance appraisals are used to assess the work of in-house staff members on a regular basis.

mass production: A large amount of material has been developed in a relatively short time. More than one hundred (one-semester) courses have been developed in less than three years. This involves the setting and enforcing of schedules in order to ensure a steady flow of material through the system.

quality control: Methods are used to ensure that the quality of courses meets the required standards in the areas of academic credibility, instructional effectiveness, and physical appearance. These methods are applied at various stages of the course development process through the use of various built-in check points (approval stages). Courses are also routinely evaluated during their delivery to students and revised if the data gathered indicates that this is necessary.

It is clear from the above that the development process can be viewed as an industrial (or technological) system comprising the tools,

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techniques and methods used for developing home-study courses.

Course Development as a Social Process

A social process can be defined as an agreement between two or more persons to perform a stated task (Cummings and Srivastva, 1977). As has been discussed above, the work of developing courses relies on technological, organizational and economic factors. However, it does not form an independent reality apart from those who create it. It exists as an element of human relationships, and it functions well or poorly as those who form these relationships function well or poorly. It is mainly the quality of the human interactions that forms the basis that determines the productive (and human) outcomes of a process such as course development.

Social processes can be conceptualized as processes which involve interaction among human beings and human exchange with the environment (Cummings and Srivastva, 1977). Human interaction serves the purposes of influencing other people, developing common values and goals, and maintaining group integration. Human exchange with the environment is a mechanism for manipulation and control of the environment, creation of new environments, and development of new technology.

The social process (or system) discussed here is the course team described earlier, which is responsible for development of a course. Crick (1980) describes a course team as follows:

> A course team has often been described as a fruitful co-operative organization which, via the pooling of ideas and the institutionalization of mutually constructive criticism, creates courses (especially inter-disciplinary ones) of a higher quality than could have been produced by a single mind. This is an 'ideal' model, and no doubt some course teams approximate it in that they work harmoniously, imaginatively and efficiently (p.127)

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A course team can be defined in impressive educational jargon by employing concepts like 'task oriented group' or 'mixed skills matrix', but a team is also a collection of people with all their fears and failings. Since the course team is responsible for course development, the success of this social process is clearly related to the effectiveness of the course development process and to the quality of the courses.

Many problems must be faced by a course team which arise from the constraints of the industrial process. Financial constraints limit the use of published material and media. Time constraints limit the depth of instructional design, visual design and editing that can be accomplished. Books go out of print or new editions are prepared by the publisher. Requests for copyright material are rejected, or simply too costly to use.

The problems imposed by the demands of the industrial process, as well as the social nature of the human beings involved, have led to a process which often differs from the ideal given above. Crick (1980) has discussed some of the dimensions of this process and his analysis forms the basis of the following discussion.

hierarchy and power - sometimes the structure of a course team is discordant with the hierarchical structure of the institution. For instance, if the course designer (manager of course team) and the program director (responsible for approval and delivery of the course) disagree about an instructional decision, it can cause severe dissonance. What is important, as Northcott (1978) rightly states, is that if the team is the productive unit, it should be given real power. It is demoralizing to a team to receive an arbitrary and unreasoned directive, such as "I don't want any visuals in this unit", when its members have agreed on their desirability.

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personality - this variable is often a critical one. A poor personality 'mix' in a course team can seriously hamper the effectiveness of the group process. As the coordinator of the process, the course designer must be tactful and sensitive to others. Tasks such as rewriting coursewriter's material, resolving disagreements between writers and consultants, and accommodating the needs of program directors and coordinators requires a great deal of skill. Many of these activities are a threat to the egos of the professionals involved.

fear and resentment - these emotions can induce unpleasant and counterproductive behaviour in a course team. High levels of these produce a situation where professional communication becomes totally blocked by personal hostility. To escape abuse, team members use avoidance tactics such as submitting material late or withdrawing from making any real active contributions. At the end of the process, they may even refuse to have their name appear on the course.

novelty - the activity of creating self-instructional materials and performing in a team is a novel experience for many academics (Riley, 1979). Some knowledgeable academics may not be competent writers, or may be unable to meet deadlines. Considerable friction can occur when it becomes obvious that a team member is not up to the demands of the new role.

workloads - workloads are typically heavy for members of the course team, who are most likely working on several courses concurrently. At times, this can seem like a treadmill which produces feelings of general fatigue and non-cooperation. An unwillingness develops to make minor changes or to make any effort 'beyond the call of duty'.

frustration - the constraints of the industrial process and the factors described above, can lead to an extreme sense of

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frustration and to an abandonment of the team process. This feeling has been well described by Mason (1976):

> Our noses are usually pointed so firmly in the direction of deadlines that any sense of the whole is dissipated by the time the course is half-finished. Near the end we raise our eyes to the next task (a new course, maintenance, study leave) and neglect the final details of course production as a team event. Sometimes only the editor and chairman even know that it is finished! (1976:33)

Some course teams work better than others and the problems outlined in this section represent one end of a continuum. However, these problems do occur and must be addressed in order to maintain an effective course development process and to develop high-quality courses.

Conclusions

The industrial process and social process can be examined independently, as has been done in this paper. But the task of developing courses depends on the joint operation of both processes, and it is the relationship between them that is critical to the success of this task. Therefore, the fundamental issue is how to integrate the independent but related social and industrial processes into an overall framework for effective and efficient course development. This is the basis of the socio-technical theory advanced by Cummings and Srivastva (1977).

Crick (1980) suggests some remedies to the problems raised in the social process. He proposes that more careful recruitment is one solution. Factors such as whether one gets along well with colleagues, whether one is student-oriented or whether one can keep to a schedule may be

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crucial and should be used as criteria in hiring. His second solution is in providing practical staff development activities in this area.

A third area is in the organization of the institution. It is important to give the course team the autonomy that it requires, that workloads be reasonable and that schedules be realistic. Finally, he suggests that the presence of a skilled counsellor can contribute to the growth of trust and strength in a team. Perhaps the counsellor could sensitize people to some communication skills so that they become more aware of themselves and more conscious of the effects they have on other people. This could improve performance on shared tasks.

Emery (1963) has developed a number of propositions at the individual level which may be useful. Several of these are relevant to the present course development process.

Emery's suggestions involve setting an optimum variety of tasks within the job and ensuring that these are interdependent, that is, carrying out one task makes it easier to get on with the next or gives a better end result. These tasks should involve different levels of attention, degrees of effort, or kinds of skill.

The tasks included in the job should include some degree of care, skill, knowledge or effort that is worthy of respect in the community. It should also make some perceivable contribution to the utility of the product for the student.

An optimum length of work cycle is important. Too long a cycle makes it difficult to build up a rhythm of work. Course team members should be given some scope for setting standards of quality and quantity of production and a suitable feedback of knowledge of results.

Rice (1958) has developed some propositions at the group level. The more relevant ones are:

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a. use the smallest number of people on a whole task so that it can be efficiently performed and meet the social needs of its members,
b. ensure that all members of the group comprehend the skills of other members (without necessarily having or wanting to have these skills),
c. minimize the differences in prestige and status within the group,
d. allow group members to move to other small groups if they become disaffected to the extent that they can no longer fit into their own work group.

Applying the above principles should help to bring the industrial and social processes more in harmony. It is also important that we account for the different rates of change of these two processes. Failure to realize that social change is slower than technical (or industrial) change will place harmful strain on the social system and will lead to some of the pathological effects discussed earlier.

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TABLE 1

Status of the Institute, January, 1982

Enrolments	- September 1979 - 750 enrolments - January 1980 - 2,400 - Fiscal 1980-81 - 7,500 - Fiscal 1981-82 - 11,000 (predicted)
Students	- Two-thirds are between ages 25-40. - Two-thirds are women. - Two-thirds are from non-metropolitan regions.
Courses Available (Most developed in-house)	- September 1979 - 7 credit courses - January 1980 - 37 - September 1980 - 52 - January 1981 - 64 - September 1981 - 85 - January 1982 - 97
Programs	- Adult Basic Education: Grade X completion; Grade XII completion. - Career/Technical/Vocational: Nine certificate programs: - General; - Construction Management; - Industrial Supervision; - Motel Management; - Office Assistant; - Office Management; - Secretarial; - Electronics; - Restaurant Management - University: Bachelor's Degree: Eight academic concentrations: - Economics; - History; - Psychology; - English; - Sociology; - Geography; - Mathematics; - Biology
Student Support Services	- Seven Regional Advising Centres throughout British Columbia - Tutors for each course, mail and toll-free telephone contact - Library "hot-line"
Staff	- 106 regular and 23 temporary employees (in-house) - Approximately 100 tutors and 67 coursewriters and consultants

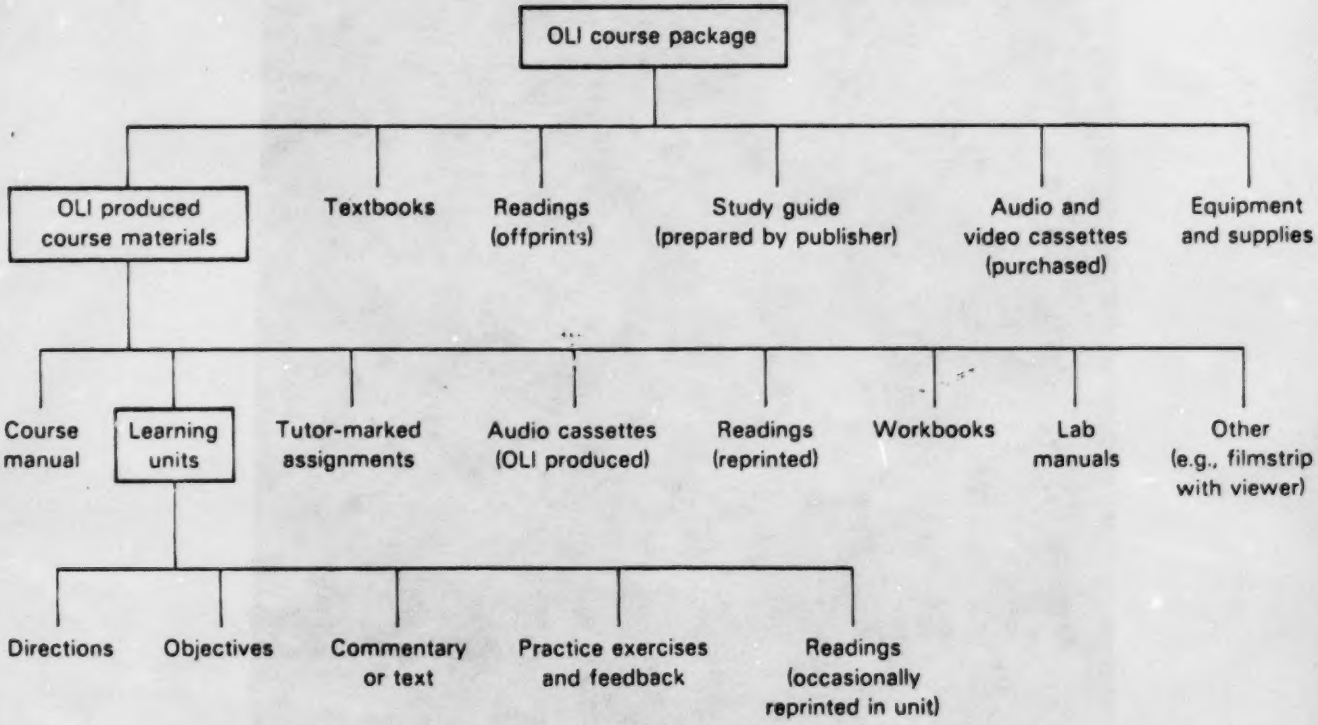

Figure 1. Structure of an OLI course

TABLE 2

Main Function of Course Team Members

Course Team Member	Main Function
Course Writer	- Prepares course material
Consultant	- Ensures academic acceptability and transferability outside of OLI
Program Co-Ordinator (and/or Director)	- Ensures internal academic acceptability and articulation with other OLI courses
Course Designer	- Edits and instructionally designs material, and co-ordinates development of the course at OLI
Visual Designer	- Designs and develops visuals for course
Copyright Officer	- Advises course team members about copyright and applies for copyright clearances
Pilot Student (when available)	- Works through drafts of material in developmental stage
Scriptwriter and/or Producer	- Works on preparation of audio script for studio recording

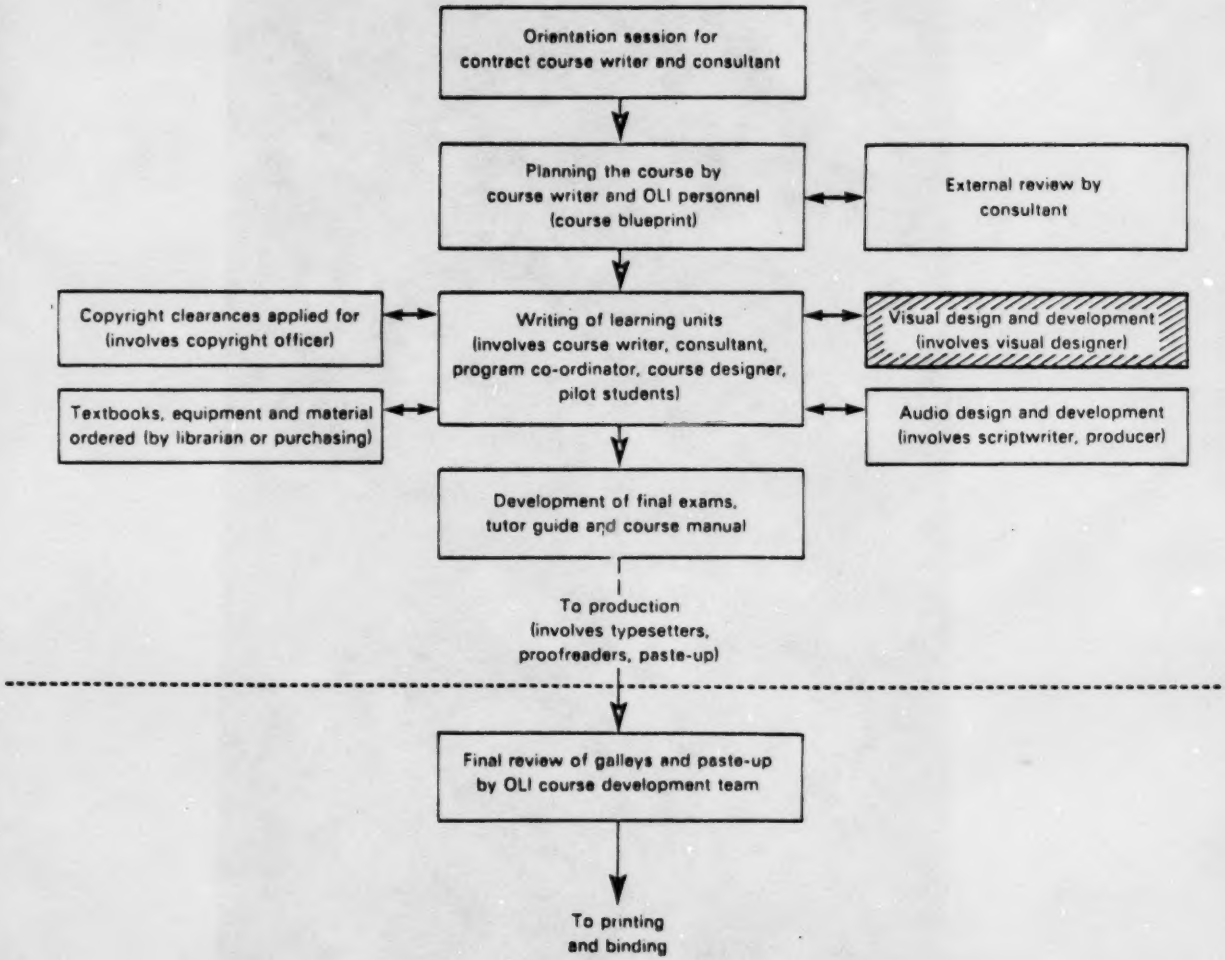
Orientation session for contract course writer and consultant
Planning the course by course writer and OLI personnel (course blueprint)
External review by consultant
Copyright clearances applied for (involves copyright officer)
Writing of learning units (involves course writer, consultant, program co-ordinator, course designer, pilot students)
Visual design and development (involves visual designer)
Textbooks, equipment and material ordered (by librarian or purchasing)
Audio design and development (involves scriptwriter, producer)
Development of final exams, tutor guide and course manual
To production (involves typesetters, proofreaders, paste-up)
Final review of galleys and paste-up by OLI course development team
To printing and binding

Figure 2. OLI course development process